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ABSTRACT

To examine whether developmental changes occurred and whether motivation to maintain good health was related to sex and socioeconomic status, a longitudinal study of third and seventh graders was conducted at five semiannual intervals. Data were obtained from subjects' responses to the Mouth-Appearance Pictures, a group-administered forced-choice task consisting of a set of nine pairs of pictures which require a child to choose between a more attractive but less healthy mouth and a less attractive but more healthy mouth. Of the 1,341 respondents who participated in the first questionnaire administration, 605 completed all five sessions. Health motivation was found to decrease linearly with age and to be inversely related to socioeconomic status in the younger sample. Implications for health education programs, theory, and future research are discussed. (Author/RH)

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HEALTH MOTIVATION IN YOUNGSTERS: A LONGITUDINAL REPLICATION

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In a current state-of-the art summary of research in children's health behavior (Bruhn and Parcel, 1982) it is apparent that health motivation has rarely been studied in young populations, and that important issues in identifying and measuring health motivation remain to be addressed. Ironically, the importance of motivation as an energizing and organizing component of much human behavior is well documented (e.g., Birney, 1968; O'Kelley, 1968). Briefly, the concept of motivation denotes priorities within the person that serve to activate and direct goal-oriented behavior. While numerous techniques exist to measure a variety of human motives, with few exceptions (e.g, Gochman, 1979) the role of motivation in health behavior is less well established and the need for measures of health motivation has been recognized for some time (Gochman, 1970; 1971). Yet, effective health programs - whether implemented in homes, schools, clinics or in community agencies - will increasingly depend on greater understanding of relevant motivation in target populations.

Early research using the Health Ideation Pictures (Gochman, 1970; 1971) indicated that health was not especially important or generally motivating in children. This finding may have been due in part to a task effect: in the free-response atmosphere children were not asked specifically about health. Forced-choice techniques offered a methodological alternative particularly appropriate for assessing one motive in relation to others. While concerns for health, per se, have traditionally been assumed to underlie and motivate health actions, in the area of dental behavior it has been suggested that

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concerns for appearance have motivating properties as well (Sheiham, personal communication). The Mouth-Appearance Pictures (MAP) were devised to assess the relative strength of these motives.

The MAP are an internally consistent pictorial task (e.g., Gochman, 1975) which have been used to demonstrate that health motivation 1) is independent of other, non-motivational components of the health belief model (Gochman, 1977); 2) has an organizing effect upon selected health-beliefs (Gochman, 1972b); 3) decreases developmentally in a cross-sectional sample (Gochman, 1975); and 4) is inversely related to socioeconomic status in respondents younger than twelve (Gochman, 1975).

Of particular interest to developmental psychologists and to a broad range of health professionals, is whether the observations of developmental decreases and socioeconomic relationships shown in the cross-sectional data would be replicated in a longitudinal study. Of additional interest is whether the absence of any gender related effects in the cross-sectional data would continue to be observed.

Method

Sample selection

Complementing earlier cross-sectional research (e.g., Gochman 1972a; 1975) a longitudinal study was designed to observe school children at five semi-annual intervals over a two-year period, beginning in November 1970. An initial sample of 1341 youngsters was identified in the Flint, Michigan School System: 686 in third-grade classes (two in each of twelve elementary schools) and 655 in seventh-grade classes (six in each of four junior high schools). These schools were selected from a population with the following characteristics: 1) a principal who maintained a favorable attitude toward the research, 2) students who were thought to be willing to cooperate, and 3)

location in a neighborhood with an expected low rate of family mobility. When these factors were considered in conjunction with the necessity of seeking socioeconomic heterogeneity, there was virtually no freedom to permit probability sampling.

Of the 1341 respondents who participated in the first questionnaire administration, 605 completed all five sessions. Two factors account for this unexpected attrition: 1) a school that had initially agreed to participate, subsequently withdrew from the study after the first two sessions for reasons unrelated to the research; and 2) several new schools were constructed in neighborhoods adjacent to those in the study, leading to the transfer of numerous respondents between the third and fourth questionnaire sessions. This only came to light after the fact. On the basis of rather acceptable attrition levels between the second and third sessions (when, in fact, a considerably higher level had been anticipated) only minimal attrition was expected at these later sessions. Although no resources were available for systematic follow-ups, a rigorous attempt was made between the fourth and fifth session to reach all respondents who had completed the first four sessions, as well as those who had completed at least the first and third.

Socioeconomic status

Income and educational level data for each of the city's residential areas had been obtained independently at the time the study was initiated by the Flint City Health Department and the Michigan Department of Public Health, Center for Health Statistics. Superimposing maps of the school districts on maps of these residential areas, it became possible to rank each school district in terms of the following indices: percent of families reporting an income of less than $4,000 per year, percent of families reporting an income of at least $12.000 per year, percent of persons reporting completion of less

than 12 grades of school, and percent of persons reporting completion of at least four years of college. The school districts were ranked independently by both the investigator and an assistant in research; significant rho's ranged from .80 to .92 for the four dimensions for the twelve elementary schools. The sum of these two sets of rankings provided a single measure for each school in each of the four dimensions. These were then totalled across each of the four dimensions to provide a final sum for each school. The distribution of these sums led to grouping the twelve elementary schools into three socioeconomic levels: low (2), middle (6), and high (4); and the four junior high schools into low (1), low-middle (2), and high-middle (1) levels. Sample characteristics are provided in Table 1.

Table 1 about here

Health motivation

Health motivation was measured by the Mouth Appearance Pictures (MAP), a set of nine pairs of pictures which require a child to choose between a more attractive but less healthy mouth and a less attractive but healthier mouth. Respondents circle the one mouth in each pair that they would like to have. There are three degrees of attractiveness (straight, moderately crooked, and severely crooked teeth) and three degrees of health (two, five and eight cavities). Considerable care was taken in the drafting of the pictures to eliminate apparent racial characteristics. As an additional precaution, the pictures were printed on buff-toned paper to minimize cues for racial identification. Figure 1 shows the basic pictures.

Figure 1 about here

In the third grade, 97.8% of the sample selected the mouth with the straight teeth as the one most wanted; 94.9% selected the one with the most crooked teeth as the one least wanted. In the seventh grade, the figures were 99.4% and 97.7%. The basic assumptions underlying the relative attractiveness of the mouths were thus confirmed.

Scoring. Responses reflecting an appearance choice were coded as "1"; those reflecting a health choice, as "2." Earlier reports (e.g., Gochman, 1975) revealed the MAP to be internally consistent.

Procedure

Questionnaires which included the MAP among other variables were group-administered during regularly scheduled class time. The potential respondents were assured of confidentiality and anonymity, that there were no right or wrong answers, and that the questionnaire was not a test. They were permitted to decline to participate if they wished. In all classes, to insure standardization, each item was read aloud.

Results

Table 2 outlines the mean health motivation scores for each sample at each of the five sessions, and for each sex and socioeconomic level at the first session.

Table 2 about here

To explore whether health motivation continues to be inversely related to age and - among younger respondents - inversely related to socioeconomic

status, and whether it is related to sex, a multiple analysis of variance was selected based on repeated meaures at different times for complete cases (e.g., Cole and Grizzle, 1966; Grizzle and Allen, 1969). The model's assessment of the main effects of sex and socioeconomic status is based on an average of scores across all five points in time.

Developmental effects

Among third graders a significant main effect was observed for age, i.e., change over time, F (4, 295) = 15.79, p <.0001, with no interactions. Moreover, this change over time was observed to have significant negative slope, F (1, 298) = 62.72, p <.0001; MAP scores decreased in linear fashion as respondents grew older.

Among seventh-graders significant main effects were also observed for age, i.e., change over time, F (4, 240) = 3.57, p <.01, and for negative slope, F (1, 243) = 5.61, p <.02. While there was a significant interaction between sex and age in amount of change over time, F (4, 240) = 2.62, p <.05, there was no significant interaction between sex and slope. In addition, seventh-graders had significantly lower levels of health motivation than third-graders, 1.26 vs. 1.64; t (1329) = 17.55, p <.001.

Age is then significantly, linearly and inversely related to health motivation. Health motivation decreases developmentally in both samples.

Socioeconomic status

A significant main effect for socioeconomic status was observed among third graders, F (2, 298) = 13.25, p <.0001: health motivation decreases as socioeconomic status increases. Health motivation scores for the three SES levels at the first session were 1.72, 1.68, 1.53. No main effect was observed among seventh-graders where socioeconomic status and health motivation were unrelated.

Sex

In no sample was any main effect observed for sex, i.e., there was no sex difference in scores averaged over five sessions. Although in the seventh grade a significant interaction was observed between sex and scores at different points in time, F (5, 239) = 2.41, p <.05, t-test analyses of mean scores at each session revealed no significant differences at any of them. These latter analyses, of course, were based on complete cases at each session, rather than on the more limited number of complete cases for all five sessions. The observed interaction may thus be an artifact. Further examination of the scores for each gender at each session revealed that a significant interaction between sex and change over time, F (4, 240) = 2.62, p <.05, reflects that the rate or pattern of decrease in health motivation may vary as a function of gender. While both males and females show developmental linear decreases, the degree of slope itself may be gender-related.

Discussion

Developmental effects

These longitudinal results confirm the earlier cross-sectional findings (Gochman, 1975), and clearly indicate that health motivation - in relation to appearance motivation - decreases significantly, and in linear fashion with age. Moreover, the significance of this developmental decrease is unaffected by sex or socioeconomic status. As they get older, males and females drawn from three different socioeconomic strata progressively increase their preference for nicer-looking, more attractive mouths over mouths that are healthier.

Moreoever, it must be observed that only among the very youngest respondents - the third-graders at the first two sessions - is there any absolute preference for health over appearance (i.e., scores greater than

1.5). In all other groups appearance is preferred to health. In addition, it must be observed that in the older, seventh-grade, sample, the MAP scores at the outset of the study were already exceedingly low (1.26), reflecting an exceptionally marked preference for appearance, but that even these continue to decrease systematically, if not appreciably.

This replicated decrease in health motivtion is understandable in terms of social developr nt. Older children and young adults are far more sensitive than younger children to the image they project to their peers, and to their acceptability as attractive social and sexual partners. Moreoever, with increasing age, they have longer cumulative exposure to media, advertising and other community and societal socializing factors that emphasize the potental cultural value of attractiveness. Jenny (1975, p. 20) has pointed to the strong "sociocultural expectations for an attractive" appearance that exist pervasively in our own culture as well as in many others.

In contrast to observations of other health beliefs, health motivation is the only one of a group including perceived vulnerability to health problems, perceived health benefits, beliefs about toothbrushing frequencies, and preventive attitudes that demonstrates any clear, consistent linear developmental progression (Gochman, in press).

Socioeconomic status

The socioeconomic differences in health motivation in the third grade present a paradox to certain health professionals. Reactions to similar findings in cross-sectional data (Gochman, 1975) revealed that health professionals expect health motivation to be directly - not inversely - related to socioeconomic status. Too often, health professionals infer motives from behaviors - such as utilization rates - rather than from independent measures. Allen (1970) has taken issue with this methodological

problem that often permeates research on impoverished groups. He argues convincingly against using a motive inferred from a behavior as a way of explaining that behavior. Utilization of health services is complexly determined, with income as a major factor. Lack of income serves as a strong barrier to utilization. In the face of such barriers, the present data corroborate the lack of justification for inferring and expecting correspondingly low levels of health motivation in poor populations.

By measuring motivation independently of behavior, this study and its cross-sectional antecedent provide data that take issue with some of the myths of the "culture of poverty," and reinforce Allen's point that these myths must be critically examined. Moreover, the effect of socioeconomic status on health motivation disappears in older children. The absence of any effect in the seventh-grade, together with its absence in those over 12 in the cross-sectional study, suggests that whatever socioeconomic diffrences exist in younger children disappears as they grow older. Available data show no relationship between reports of dental trauma and health motivation. Possibly motivational levels reflect a social norm rather than a characteristic rooted in personal experience. Enormous unmet health needs conceivably generate a greater level of concern for health within lower socioeconomic communities. This, in turn, is transmitted to, and shared by, younger children in these areas. As these children mature, and their exposure to media, advertising, and the larger community increases, this initially higher level of health motivation is modified and lowered by this wider range of socializing agents. This is one explanation, and demonstrates the need for additional systematic research into the roots of health motivation.

Implications for research

This research, through its focus and method, clearly helps to fill a

tremendous knowledge gap, a problem attested to strongly by others (e.g., APA Task Force, 1976; Evans and Dembroski, 1975). The findings thus increase understanding of children's health cognitions, an area that with few exceptions (e.g., Campbell, 1978; Gochman, 1977; Natapoff, 1978; Saucier, 1979) has been seldom investigated rigorously.

The issue of health motivation is essentially the issue of determining what priorities, preferences, appetites, values, etc., impel persons to engage in health relevant behavior, to take specific preventive actions, to use necessary health services, to interpret signs and symptoms of illness correctly, to enact sick-role properly, to accept medical and other health-related regimens, to avoid risk-taking behaviors, etc. Such preferences, priorities, appetites, values, etc., would comprise a constellation of health motivation. The supremacy of concerns for physical preservation, pain avoidance, well-being, etc., has yet to be fully demonstrated. concerns for appearance, sexual attractiveness, ability to work and earn an income, social functioning, etc., may be very potent motives in generating and supporting health behaviors.

Health behavior research, then, would have as a primary task, the development of instruments to assess health-germane motivation not only in young populations, but throughout the continuum of human development. Some health-germane motives may be more preponderant at certain periods in the life-span, and less so at others.

Future research is also needed to discover the determinants of health motivation. For example, to what degree do its roots lie in other personal characteristics, such as anxiety or self-concept, or in personal and family health experiences? To what degree is it a reflection of community and or societal norms?

Implications for health professionals

Although health professionals may often assume so, "health" does not appear to be an important motive or value for these samples. It may be difficult for professionals with a strongly ingrained commitment to health itself, to consider evidence that health in the abstract is not a similarly compelling universal value. Perhaps this difficulty lies close to the root of some of the problems confronting planners and implementors of health services and pro grams. "Health" as an abstract concept may have little appeal, but concerns about appearance, cosmetic interests, economic and social costs - such as losing days of work and wages, or missing social engagements because of health problems and emergencies - may, in fact, be more appropriate targets for health programs and promotional activities. Health professionals - educators, planners, program developers, researchers and direct service practitioners - should all look closely at the motives which are, in fact, held by target populations. Educational programs, plans for services such as HMO's, medical regimens, etc., should be based on empirically established reality rather than on untested assumptions.

Health professionals must come to grips with what toothpaste manufacturers have known for a long time: desires for attractiveness, pleasant breath, sex appeal, etc., can be effectively used to sell toothpaste. These very human concerns could, one would surmise, also be used to "sell" health behaviors.

As a further caution, the data argue that professionals should also question their own assumptions about socioeconomic differences in health motivation, and should not cavalierly attribute selected characteristics to population subgroups.

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TABLE 1. SAMPLE CHARACTERISTICS

	3rd Graders				7th Graders			
Age, First session	104 months, s.d., 6 months; 8 2/3 years				152 months, s.d., 5 months; 12 2/3 years			
Sex	Males	Females	(M.D.)	N	Males	Females	(M.D.)	N
First session	376, 55.1%	306, 44.9%	(4)	686	326, 50.1%	325, 49.9%	(4)	655
Complete data	183, 56.0%	144, 44.0%		327	132, 47.5%	146. 52.5%		278
Socioeconomic status	Low	Middle	High		Low	Low-middle	High-middle	
First session	109, 15.9%	347, 50.6%	230, 33.5%		174, 26.6%	330, 50.4%	151, 23.0%	
Complete data	55, 16.8%	133, 40.7%	139, 42.5%		46, 16.5%	183, 65.8%	49, 17.6%	
	White	Nonwhite	(M.D.)		White	Nonwhite	(M.D.)	
First session	348, 52.6%	313, 47.4%	(25)		331, 51.6%	310, 48.4%	(14)	

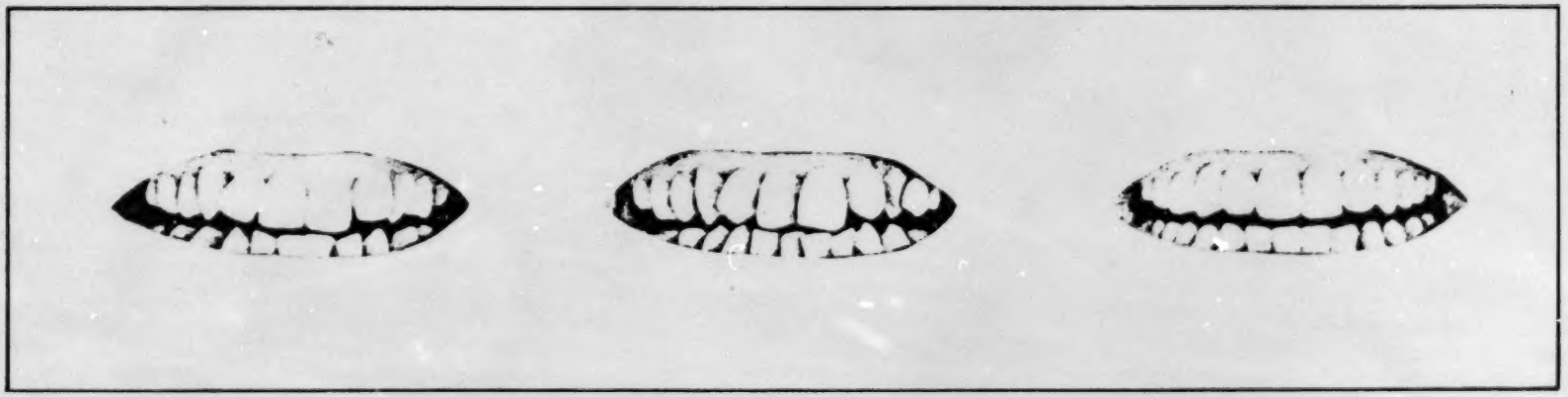
TABLE 2 LEVELS OF HEALTH MOTIVATION (MAP) BY AGE (SESSION), SEX, AND SOCIOECONOMIC STATUS

Grade	Session					F	Sex		F*	Socioeconomic status			F*
	1	2	3	4	5	df	M	F	df				df
						p			p				p
3rd										Low	Middle	High	
$\bar{x}$	1.64	1.51	1.47	1.40	1.39	15.79	1.66	1.61	NS	1.72	1.68	1.53	13.25
s.d.	.42	.45	.44	.44	.44	4,295	.42	.43		.40	.41	.44	2,298
N	684	665	503	470	492	<.0001	374	307		109	346	229	<.0001
7th										Low	Low-middle	High-middle	
$\bar{x}$	1.26	1.25	1.24	1.22	1.20	3.57	1.26	1.25	NS	1.29	1.23	1.28	NS
s.d.	.36	.36	.34	.33	.32	4,240	.35	.37		.40	.33	.37	
N	647	618	489	449	414	<.01	322	321		173	326	148	

*F statistics for sex and socioeconomic status are based on values at all five sessions; means are reported for first session only.

Figure 1

Here are some pictures of mouths. Show us the one mouth you want most by placing a circle around it.



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